BEFORE THE CRP CONTRACT EXPIRES

A QUESTION AND ANSWER APPROACH

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The Food Security Act of 1985 created the Conservation Reserve Program (CRP). A key goal of the program was to reduce soil erosion and improve environmental quality. Approximately 61% of the contracts on 36 million CRP acres will expire in 1996 and 1997. ***(13)**

As contract expiration approaches, many questions will be asked regarding whether to return to crop production or leave in grass. Strengthening net farm/ranch income will ultimately drive this decision. *Current high grain prices and low livestock prices will not last forever and deciding to convert CRP over to cropland is a decision that should be made in light of long term prices and options, not just current situations.*

Examine the options and review the research. The following questions may be yours.

- **I PLAN TO BREAK MY CRP WHAT SHOULD I DO FIRST?**

Before any decision is made, a thorough survey and evaluation of the field(s) should be made. Many CRP acres are highly erodible and are not suitable for sustained crop production without

***Numbers refer to references**

extensive management inputs. Consider leaving these marginal areas in grass which can be used for haying, grazing, and wildlife habitat. Other areas to consider leaving in permanent vegetation are waterways and channels and land adjacent to water courses and wetlands to act as filter strips. If soil loss due to wind erosion is a concern, consider leaving grass strips to act as barriers reducing wind velocities and aiding in snow catch. Leave the ends of fields in grass to reduce compaction from turning heavy equipment. Conservation Compliance is a big factor when converting CRP to cropland. Contact your local NRCS (Natural Resources Conservation Service) field office for assistance. **(9, 10)**

- **HAS MY SOIL IMPROVED OVER THE PAST TEN YEARS UNDER CRP?**

Research in the Northern Great Plains show significant improvements in soil physical, chemical, and biological properties on CRP ground during the past ten years. CRP grasses have provided many thousands of miles of roots underground which then decompose in the soil. A spoonful of soil contains more micro-organisms than there are people on earth. The greater the biological activity of a soil, the more fertile it is. Improvements in soil stability, tilth, infiltration rate, pore space, water holding capacity, quality and quantity of organic matter, total carbon and nitrogen have been measured on fields that were returned to permanent stands of grass under the Conservation Reserve Program. Less soil compaction can also be expected on CRP ground. **(7, 8, 13, 15)**

- **WHAT CAN I DO TO SUSTAIN THE IMPROVED SOIL CONDITION?**

In areas where the CRP will be converted to cropland, conservation practices such as minimum tillage or no-till, and multi-year crop rotations will help to maintain soil organic matter and soil tilth and reduce soil erosion. Rotations that contain soil-building legumes such as alfalfa and clover will be especially beneficial in maintaining organic matter and fertility levels. The most dramatic improvements in soil quality under CRP occurred on land that had been previously conventionally tilled. CRP slightly improved the soil quality on land that had been under an intensive no-till cropping system. This indicates that no-till management could be used to preserve the improved soil quality obtained under CRP. **(2, 3, 8)**

- **WHAT EFFECT WILL CONVENTIONAL TILLAGE METHODS HAVE ON MY SOIL'S QUALITY?**

Studies have shown that cropped soils after only 19 months of cropping have 6-9% less organic carbon and nitrogen than soils left in grass. Poor soil tilth and structure, reduced infiltration, increased crusting and erosion, reduced water holding capacity, reduced water quality and increased compaction are a few of the problems resulting from the loss of soil organic matter. The decline in organic matter was the smallest with no-till cropping systems. **(3, 11)**

- **I PLAN ON CONVERTING CRP TO CROPLAND. WHICH METHOD WILL WORK BEST?**

In some of the semi-arid regions of the Great Plains, the use of herbicides and no-till have not been completely effective on weed control because of moisture stress resulting in a 10 to 25% infestation of grasses during the cropping season. A conversion strategy using minimum tillage with a sweep to undercut and timely application of systemic herbicides (those that move throughout the plant) has been most effective at maintaining soil quality and producing acceptable crop yields. In areas of higher moisture, herbicides have been more effective controlling grasses and a no-till system using minimum disturbance openers will maintain soil quality without sacrificing crop yields. **(1, 13)**

• WHEN ARE HERBICIDES MOST EFFECTIVE ON CRP GRASSES AND LEGUMES?

The key to successful vegetation control, whether in humid or semiarid regions, is applying systemic herbicides to plants when carbohydrates (plant food) are moving to the roots.

Cool season species: Bromegrass, wheatgrass, wildrye, alfalfa and sweet clover are examples of cool season grasses and legumes. Systemic herbicides are most effective on this vegetation when applied in the fall and spring when plant food for growth and storage is moving to the plant roots. However, herbicides are much less effective if applied when plants are mature, drought stressed, or frost damaged. Success with spring applications are more consistent because soil moisture is typically less in the fall. However, fall sprayings are effective if moisture stress is not a factor. Cultural practices, such as haying, mowing, or sweep plowing, can be combined with herbicide application to improve perennial species control.

Warm season species: Bluestems, gramas and switchgrass are examples of warm season grasses. Because warm season grasses do not initiate fall growth, herbicides need to be applied in early summer when food is moving to the plant roots. Haying, grazing, mowing or a spring tillage with a sweep plow prior to spraying will improve the herbicides performance. As noted above, moisture stress will reduce effectiveness. **(1, 4)**

• WILL MY CRP GROUND REQUIRE FERTILIZER?

Yes. At first, soil organisms (decomposers) tie up available nitrogen while converting plant residue to soil organic matter. This may require additional fertilizer inputs of nitrogen during the first crop year after CRP to compensate for the immobilized nitrogen. Any soils being converted from CRP to cropland should be tested for fertilizer requirements. **(4, 13)**

• HOW DOES SOIL CONDITION DETERIORATE?

Soils deteriorate physically by losing tilth, increased compaction and reduced water infiltration. Soils degrade chemically by losses of nutrients, increases of salts and sodium, and changes in pH. Soils degrade biologically through the loss of diversity and number of soil organisms. Degradation most often occurs when soil erodes and is excessively tilled. It is during these events that soil organic matter is lost and it is the soil organic matter which contributes most to the tilth, stability, and fertility of soil. Poorly timed tillage and heavy traffic causes increased compaction. Excessive fallowing can cause an increase in salts rising to the soil surface as extra soil moisture evaporates. **(2, 3, 11)**

• CAN MY ORGANIC MATTER BE INCREASED UNDER CULTIVATION?

Yes. Organic matter levels increase as more plant residue is added to the soil. It is estimated that about 100 lbs. of residue is produced for each bushel of wheat. A yield of 40 bushels would produce 4000 lbs. of residue. Under minimum tillage, in an intensive multi-year crop rotation, organic matter levels are maintained or increased especially when long periods of summer fallow are reduced. **(2)**

• HOW DOES RESIDUE AFFECT SOIL MOISTURE CONTENT?

Plant residues greatly affect the soils ability to hold moisture. Soils under a no-till system are able to store about twice as much moisture as soils in a conventional tillage system. The standing residue traps snow in the winter and reduces evaporation from the soil surface during the summer. Leaving residue from CRP grasses on the soil surface after converting CRP to cropland will increase the amount of stored moisture in the soil. A more intensive crop rotation may be required to prevent leaching of chemicals and

retard increased salinity levels caused by evaporation due to excessive fallowing. A "rule of thumb" is 1 acre inch of stored moisture equals approximately $20 - $30 in gross income. **(5, 6)**

- **WHAT EFFECT WILL BURNING, BEFORE I TILL, HAVE ON THE SOIL?**

Burning removes surface residue, leaving the soil with little or no protection from erosion. If the burned area is tilled, the soil is completely exposed to wind and water. The loss of nutrients and organic matter caused by burning combined with the long term effects of soil erosion makes this an undersirable approach to convert CRP into crop production. **(4)**

- **I HAVE DECIDED TO GRAZE AND HAY MY CRP, WHAT TYPE OF FORAGE QUALITY CAN I EXPECT?**

Years of dead plant material have accumulated in most CRP fields. Expect low initial crude protein levels if old growth is not removed. A timely prescribed burn or haying will remove old growth and provide a lush green growth for harvest. Stocking density can be increased to allow quick removal and trampling of dead material. Minimize the time spent under high stocking density as low quality forage produces poor animal performance. Livestock performance should be monitored and protein supplements may be needed. **(12)**

- **WHAT SHOULD I CONSIDER WHEN GRAZING CRP?**

Evaluate the types of CRP grasses you have. Cool season grasses (bromegrass and wheatgrasses) provide mid spring to early summer forage and late fall grazing opportunities if moisture conditions allow. Graze warm season grasses (bluestems, gramas, and switchgrass) during summer months. Properly managed cool and warm season pastures will provide a high plane of nutrition throughout most of the grazing season. Stocking rates can be determined by clipping and nutrition analysis as well as from data provided through local NRCS offices. Proper grazing stimulates tillering and rhizome production. Healthy plants produce a healthy root mass which provides a favorable environment for soil organisms. As biological activity increases, nutrient cycling improves leading back to healthy plants. Therefore, implementing a responsible grazing strategy is highly recommended to sustain soil and plant health. **(12, 14)**

AT THE CROSSROADS AGAIN

We are at a historical point in time. The "Soil Bank" established in 1956 lasted until 1972. Nearly all of the Soil Bank land reverted to crop production by the mid-1970's. Sadly enough, it led to few enduring resource conservation benefits. **(13)**

During the last ten years, deposits of soil organic matter, nature's carbon and nutrient banking system has been building. The important question to be asked is whether to spend all of the interest and principle (conventional tillage), to reinvest the dividends (permanent vegetation), or live on the interest earned (minimum or no-till). **(11)**

If you would like to obtain a copy of the following references, contact the Soil Quality Team at 970-345-2259 or circle the reference number(s), detach the reference page and send to Central Great Plains Research Station; P.O. Box 400; Akron, CO 80720 and a copy of the literature will be sent to you.

Contact your local NRCS field office and County Extension personnel for further assistance in managing CRP acres before the contract expires.

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